NASA Glenn
Plum Brook Station

TENTH EDITION
APRIL 2004

Decommissioning NEWS
Plum Brook Station

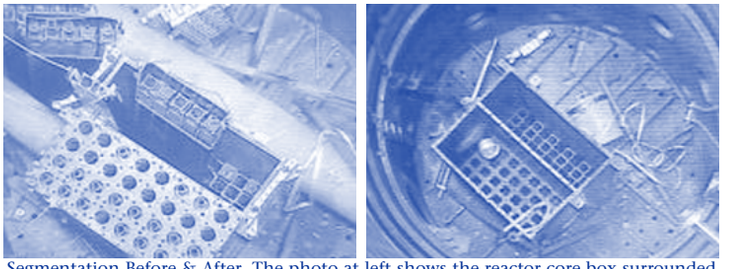
A quarterly newsletter to inform the public about NASA's Decommissioning Activities

WHAT'S INSIDE

Work Springing Forward on Decommissioning Project

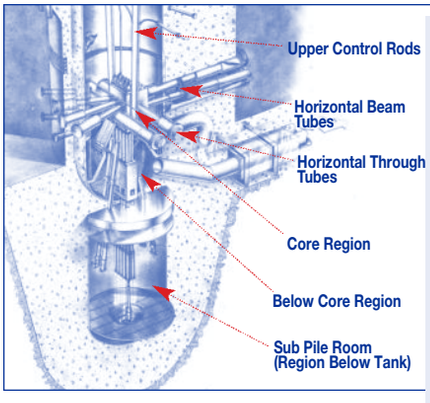
The long winter did not slow progress on the Decommissioning Project in early 2004. According to NASA Senior Project Engineer Keith Peecook, "There's been activity in nearly every building" in the Reactor Facility. Much of the focus continued to be on segmentation activities, with workers from subcontractor Wachs Technical Services completing Phase 2 of the Segmentation Plan that NASA developed last year.

When NASA was planning work on the project, removing the reactor internal components and cutting up the tank were high priorities, to safely remove the highest sources of radiation remaining in the Reactor Facility as early as possible. This strategy paid off in February, when workers removed one beryllium reflector plate, and later, the core box (to which another plate was attached) from the reactor tank. Peecook said that when the reactor was operational, the beryllium plates reflected neutrons back into the reactor, having the effect of "making the reactor bigger without adding more fuel." The core box was where the nuclear fuel was actually contained.



Segmentation Before & After. The photo at left shows the reactor core box surrounded by several reactor internal components, including tubes (just below the core box and to the upper right). The photo at the right shows that both tubes, and other components, have been removed. The core box was removed in February.

After removing the intact plate, workers placed it into a steel liner, to which they added an epoxy-like substance to stabilize the plate (see sidebar). The plate and attached core box were moved to a cutting station in the Containment Vessel where the core box was segmented, then the core pieces and the attached plate were moved into liners and immobilized. The filled liners were moved into a safe interim storage area within the Hot Lab for eventual shipment to the Barnwell disposal facility in South Carolina. Decommissioning Project Manager Tim Polich said, "We reached a significant milestone



This original diagram shows the reactor core 25 feet below grade. In Phase 1 of segmentation, workers removed reactor internals above the core region, including the upper portion of the control rods that ran from grade level to the bottom of the reactor. They also removed the Horizontal Beam and Horizontal Through Tubes (at the center of the diagram).

In Phase 2, workers removed reactor internals from the core region (below the tubes) including the middle section of the control rods, beryllium reflector plates and the core box. In Phase 3, workers are removing all remaining reactor internals and, in Phase 4, will segment the reactor tank.

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Immobilizing for Safety

An epoxy-like compound is making the packaging and shipment of reactor internals safer and easier. NASA Senior Project Engineer Keith Peecook says the compound, "goes in as a liquid and sets up like hard rubber." Workers have used the substance produced by Locktite (a company owned by Decommissioning Project subcontractor Duratek) to immobilize beryllium reflector plates containing some of the highest amounts of radiation in the Reactor Facility. They contain a radioactive gas, tritium, which could be released if the brittle plates broke apart - hence, the immobilization process prevents this from happening. Peecook pointed out that tritium would be hazardous "only if inhaled."

A two-person team, often accompanied by a Radiation Protection Technician, pumped some 200 gallons of the compound from a tank into a steel liner that had been placed in a transfer cask and held the beryllium plates. The compound is "non-exothermic," meaning it does not emit any heat during the few hours it takes to harden to a rubber-like consistency. Once its contents were immobilized, the liner was lifted by an overhead crane onto a transfer cart and moved, via the Canal Transfer System, into an interim storage area in the Hot Lab Building (see page two).

The liner will eventually be moved back into the Containment Vessel, placed in a shipping cask and sent to the Barnwell disposal facility in South Carolina.

Through immobilization, the risk of a radiation release during shipping is prevented. Peecook said that, in addition to preventing the plates from possibly breaking apart, the Locktite compound "has a great side benefit: It reduces the radiation (from the liner) by a factor of three to four," thus providing an additional margin of safety. ■

INFORMATION

Other ways to receive Decommissioning INFORMATION

FACT SHEETS

Since June 1999, NASA has produced fact sheets dealing with various aspects of Decommissioning. Copies are available at public libraries throughout Erie County, at the Community Information Bank at the BGSU Firelands Library, on our Decommissioning Website at www.grc.nasa.gov/WWW/pbrf and by calling our Information Line at 1-800-260-3838.

COMMUNITY INFORMATION BANK

NASA has established a Community Information Bank (CIB) at the BGSU Firelands Library. The CIB serves as a permanent repository of information on the Decommissioning Project which NASA continually updates. All information at the CIB is available to the public upon request.

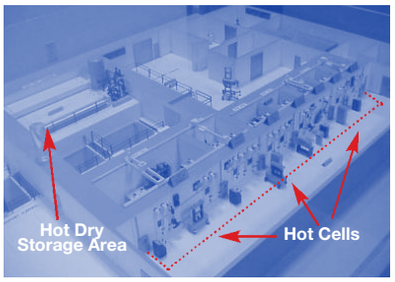
DECOMMISSIONING WEBSITE

Decommissioning information is available on-line. Visit us at www.grc.nasa.gov/WWW/pbrf

SPEAKERS

Upon request, NASA will provide speakers on Decommissioning to civic, community and school organizations. For further information, contact Sally Harrington through our Information Line at 1-800-260-3838, her direct line at 216-433-2037, or at s.harrington@grc.nasa.gov.

HOT LAB CLEANUP NEARS COMPLETION

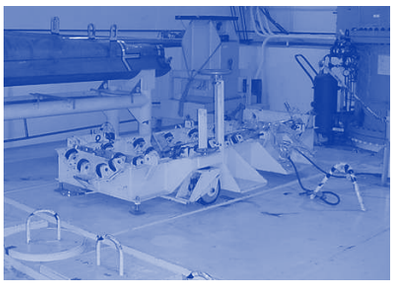


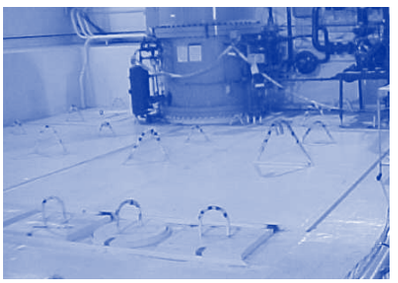
This model shows the Hot Dry Storage Area (upper left) and Hot Cells (along the right hand side) that have been the focus of Hot Lab cleanup activity.

While the Decommissioning Project's focus is on disassembling structures and equipment, workers have had success in restoring and reusing some existing equipment from the Reactor Facility. These efforts have paid off in advancing the work, especially in the Hot Lab Building adjacent to the Containment Vessel. Last year, workers from general contractor MWH Constructors were able to restore and reuse a heavy cart and overhead crane in constructing a Canal Transfer System now used to move packaged material from the Hot Lab into the Containment Vessel, for eventual shipment to licensed disposal facilities (see our January 2004 edition).

In recent months, they have also been able to reuse a remote controlled crane that once operated in the Hot Dry Storage (HDS) area, a deep, shielded pit where items formerly used in reactor core experiments had been stored.

In 2003, MWH workers removed loose equipment (tools, furniture, etc.) from several Hot Lab areas. These included the Hot Cells - seven rooms, heavily shielded by concrete, steel and lead - where reactor experiment materials once had been analyzed. Last year, workers removed and packaged some 600,000 pounds of loose equipment all of it dry, solid low-level radioactive waste (LLRW), including 140,000 pounds of Hot Cell doors.





Before workers could begin current work in the Hot Dry Storage (HDS) area, they had to remove loose equipment (in photo at left) that sat atop the shielded HDS pit. The photo at right shows the equipment removed.

Since late last year, workers have used another restored crane - as well as remote cameras and monitors, and long-handled tools - to remove and package equipment from HDS. They started on loose equipment containing the lowest radiation levels. More recently, they've worked on an inventory of irradiated items, including long tubes once inserted into the reactor core during experiments and control rods - as well as smaller items that had been stored in galvanized steel hoppers. Using the crane and long handled "grabbers" workers have moved items from the hoppers and have also been disassembling and removing the "Rod Rack," which once held beryllium rods. All the irradiated items are surveyed for radiation levels before packaging and shipment to licensed disposal facilities.

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Intermodal containers carrying LLRW are designed to ride atop trucks and trains before reaching their final destination, Envirocare in Utah.

Shipping Out Helps Shape Up Decommissioning Project

We're all familiar with the warning: shape up or ship out. But at the Reactor Facility, shipping out helps the Decommissioning Project shape up, and is one measure of the progress being made. Last year, NASA's efforts to package and ship low-level radioactive waste (LLRW) - mostly loose and fixed equipment from buildings throughout the complex - made the facility more than a million pounds lighter (the amount sent to licensed disposal and reprocessing facilities). During the first three months of 2004, workers shipped over 600,000 pounds.

All the waste is dry, solid and low-level. Most of it is termed Class A, containing the least amounts of radiation. To date, much of this waste has been sent to the Envirocare disposal facility in Utah. According to Senior Project Engineer Keith Peecook, most Class A waste is first sent by truck to the Alaron reprocessing facility in Pennsylvania. There, some of it is size reduced and repackaged. Then the waste is moved to "a secure, dedicated railhead facility" at Alaron, a shipping approach that he says is safer and more efficient.

The LLRW with the highest radiation content is termed Class C, and includes reactor internals removed during segmentation, and some irradiated inventory from Hot Dry Storage. It is placed in steel liners, and later, the liners will be moved into a shipping cask consisting of two inches of steel, over six inches of

Do you want to know what 's happening? Do you have questions or comments on Decommissioning?

CALL OUR INFORMATION LINE AT 1-800-260-3838.

Plum Brook Station Facilities Are Open, Adding to Accomplishments


Space Power Facility at Plum Brook Station.

It is fitting that the Mars Exploration Rovers (MER) are named Spirit and Opportunity, for both are on the rise at NASA Plum Brook Station (PBS). With the exception of the Reactor Facility currently being decommissioned, PBS remains an active and vital test facility. It is open for business and business looks good.

"We're busy planning for future projects," says Jerry Carek, manager of the PBS Space Power Facility (SPF), one of four active facilities at PBS. The SPF team conducted some 50 tests of the Rovers' landing bag system between 2001 and 2003, at speeds of up to 65 miles per hour. He says the success of the MER Mission "gave (PBS) some good exposure," but workers have not had time to take bows. On the horizon are two major projects, one taking take place next year when SPF conducts tests for NASA's Deep Space Exploration Project. The facility will be involved in testing "solar sails" made of Mylar, a very light material that can catch the sun's rays (solar winds) and propel spacecraft - hopefully to Jupiter and beyond - without expending any energy.

Carek is also excited about upcoming work to test the new James Webb Space Telescope, which NASA plans as the replacement for the Hubble. While testing on the telescope is slated for 2008, he notes that SPF must undergo some extensive modifications in 2006 and 2007, including installation of a new thermal system with high vacuum pumps and temperature controls that "can chill the telescope to 400 degrees below zero." He explains that the Webb will be a "stand-alone telescope" orbiting the Sun from "a million miles away." The testing will also require NASA to accommodate "some huge equipment," and install in SPF a series of "clean rooms" that can meet extremely rigorous standards.

Carek says SPF is not the only PBS test facility with an exciting future, but is "the most heavily booked." Still, he notes, SPF - along with the Spacecraft Propulsion, Hypersonic Tunnel and Cryogenic Propellant Tank Facilities - remains "available to accommodate both government and private industry work." Pointing out that these unique, world class facilities have served not only NASA, but also the European Space Program, Boeing and Lockheed Martin, Carek says further NASA work may come to PBS as a result of initiatives proposed by the Bush administration. He notes that SPF has work scheduled through 2015, adding, "We have four great, active test facilities here, with very bright futures."

This newsletter will periodically keep folks informed about the important and exciting things taking place at PBS, along with ongoing news about decommissioning. ■

lead, and over another two inches of steel. Last year, NASA shipped one cask to the Barnwell facility in South Carolina with another shipment planned for this summer.


A loaded truck about to leave Plum Brook Station.

Decommissioning Project Manager Tim Polich says all shipment trucks arriving at Plum Brook Station (PBS) "come in empty through the main gate" and are surveyed for radiation content. Packaged LLRW is also surveyed, and the loaded truck is surveyed before departure. Each loaded truck weighs about 40,000 pounds. Trucks exit via one of the other gates to minimize the amount of time spent on local roads. NASA provides notice to local public safety officials in advance of each shipment. Although, for security purposes, NASA does not provide the public with shipment notice, general information is posted on the 24-hour, toll free Decommissioning Information Line (1-800-260-3838).

To date, decommissioning work has resulted in approximately 60 truckloads of LLRW being shipped from PBS. In 2004, as work proceeds, there may be as many as 10 truckloads per week. By the time decommissioning is complete in 2007, NASA will have shipped approximately 18 million pounds, much of it concrete and soil removed near the end of the project. ■

COMMUNITY WORKGROUP MEMBER PROFILE

Dave Stein

He has worn many hats in his career, each a thinking cap that can benefit the Decommissioning Project. Dave Stein brings to the Workgroup experience as an engineer, Naval officer and Sandusky City Commissioner. The Sandusky native graduated from Saint Mary's Central Catholic High School a few years after NASA retiree (and former reactor worker) Jack Crooks. He remembers Crooks going on to college and subsequently working at the Reactor Facility, then later coming to speak to Dave's class. He credits interactions with fellow alumni/NASA workers for "stimulating my interest in science and engineering."

Dave majored in mechanical engineering at Villanova University, earned an MBA from Baldwin Wallace University and forged careers in the electrical construction industry and the Navy (retiring as a Captain). Having worked for a Plum Brook Station contractor (which, before his time, had built consoles in the Reactor Facility control room) he's always had confidence in NASA's "engineering ethics," and "an intimate working knowledge of NASA's safety record." He is likewise confident about Decommissioning Project safety.

According to Dave, currently Vice President of Sandusky-based All Phase Power and Lighting, Inc., "NASA and Cedar Point have always been the most interesting things in this area, so I was pleased to be asked," to join the Workgroup in 2001. He sees his role as "eyes and ears for the community," and, with his background, is able to answer technical questions. In conversations with community members, he tells people he's a Workgroup member, but since "NASA has done such a good job on outreach," he receives few questions. "People around here have always had confidence in NASA," he adds, "They have interest but they don't have concerns."

As a City Commissioner (1990-1998), Dave said there were never any problems regarding the Reactor Facility, adding that he and his colleagues "always knew NASA did (environmental) monitoring there," a program that was stepped up before decommissioning began. He also believes public servants in Erie County are well informed by NASA, which sends this newsletter and other project information to more than 50 elected officials and several more appointed officials. He adds with a laugh, "Elected officials respond to public pressure, but there has never been any," regarding decommissioning.

Dave believes NASA benefits from speaking to community organizations about the project and, as a Workgroup member, he'd be happy to make himself available upon request. "I feel confident that we're given the information we need, to tell people what's going on," Dave observes. "I'm proud to be on the Workgroup."■

VISIT US ON-LINE
You can find our Decommissioning Website at www.grc.nasa.gov/WWW/pbrf

Topics in Upcoming Issue

Project Update
Workgroup Member Profile
Documenting History

Project Update (Continued from page 1)

with the removal of the beryllium plates and the reactor core box. The rest of the project was made that much safer."

Workers have since moved on to Phase 3 of segmentation, removing reactor internals located below the core region of the tank. After Phase 3 is completed, two phases will remain: segmenting the reactor tank and cleanup and demobilization. All segmentation activity is scheduled for completion this summer.

The Decommissioning Team has also been active on other tasks across the 27-acre Reactor Facility site. Workers from general contractor MWH Constructors have been removing and packaging loose and fixed equipment from the Hot Lab Building adjacent to the Reactor Building. In addition, workers have continued to remove loose and fixed equipment from several smaller buildings, conduct characterization for radiation content throughout the entire complex, and ship packaged low-level radioactive waste (LLRW) to licensed reprocessing and disposal facilities. ■

Hot Lab Cleanup (Continued from page 2)

MWH workers have also begun fixed equipment (such as old piping and ventilation systems) removal from several areas including the Hot Cells and HDS. This entails taking apart equipment that had penetrated the cells' thick walls - including manipulator arms that once enabled reactor workers to conduct experiments from outside the cells - and also thick slabs of concrete that comprised the tops of the cells. All remaining Hot Lab work, including equipment removal (even the cranes will go) and building decontamination, is expected to be complete by the end of spring. ■

Passing the Word on the Project

Tim Polich
Project Manager

Keith Peecook
Senior Project Engineer

Over the past six years, NASA has used several vehicles for communicating with the community about the Decommissioning Project - including this newsletter, our Website, Information Line, and Community Workgroup meetings and annual Information Sessions. But when they can, project officials also visit with groups throughout Erie County. Project Manager Tim Polich and Senior Project Engineer Keith Peecook began making presentations long before decommissioning started. They have spoken to organizations including the Senior Men's Fellowship Group in Sandusky, Berlin Heights Kiwanis Club, Firelands Audubon Society and Huron Rotary Club.

Recently, Peecook addressed the Exchange Club of Sandusky and the Northeast Ohio Chapter of Hazardous Materials Managers. The long-time Huron resident says the presentations always result in "good question and answer sessions," regarding decommissioning and other NASA programs. Adds Norwalk resident Polich, "It's important to get out to where people live and work. This kind of face-to-face dialogue benefits both NASA and the community."

If your organization would like a decommissioning speaker, call our 24-hour, toll-free Information Line at 1-800-260-3838 and press Option 4 to leave a message for the Decommissioning Team (all calls are returned within 24 hours); or visit our Website at www.grc.nasa.gov/WWW/pbrf and leave a message in our mailbox. ■

NASA Glenn
Plum Brook Station
6100 Columbus Avenue
Sandusky, Ohio 44870

Next Community Workgroup Meeting
TUESDAY, APRIL 20, 7 p.m. - 9 p.m.
Erie County Senior Center (cafeteria)
620 E. Water Street, Sandusky
THE MEETING IS OPEN TO THE PUBLIC